HDR-10

UHD Test Patterns

DVS

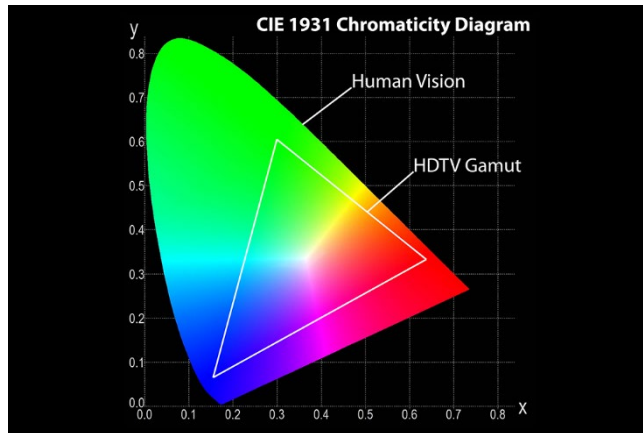### Instruction|Manual

Introduction

With all of the new and progressive advancements within display technologies and changes within industry standards, Ultra High Definition(UHD), Wide Color Gamut(WCG), High Dynamic Range(HDR) just to name a few, makes it a confusing, yet exciting time for all AV enthusiasts and professionals alike. When it comes to video calibration, we have been utilizing the same standards for decades. The current legacy standards will not suffice in regards to new UHD/HDR displays and/or content moving forward.

Since current UHD/HDR test patterns are limited, I have created an entire suite of UHD/HDR-10 test patterns that not only adhere to new industry standards, they conform to the UHDA (UHD Alliance) standards and specs, UHD 3840x2160 resolution, Wide color Gamut, BT.2020, HDR10, 10-Bit, ST.2086 color spec and ST.2084 transfer function. This project follows the same idea behind my "Advanced Calibration Disc", an attainable solution to calibrate and/or measure your new UHD/HDR display without having to spend thousands on a new UHD/HDR test pattern generator. I have created all new test patterns from the ground up, triplets that utilize the ST.2084 transfer function, precise RGB to YCbCr BT.2020 conversion and H.265/HEVC encoding with the proper metadata tags so your HDR-10 enabled display can properly decipher these new test patterns. This project was also designed around a familiar layout, "Basic Setup Patterns", "Advanced Setup Patterns", and "Miscellaneous Patterns" which include full 5% and 10% window suites. I have also included workflows for CalMAN, ChromaPure, and Color HCFR calibration software.

The test patterns can be download and stored on a flash drive and/or an external hard drive for playback on any compatible UHD/HDR-10 enabled display or UHD Blu-ray player via USB. These test patterns have also been encoded separately into individual files for ease of use and flexibility. Please visit our website at diversifiedvideosolutions.com for instruction manuals, products, services, support and see what other video calibration solutions we have available. Thank you for your support!

Q u i c k | L i n k s

DVS UHD|HDR-10 Test Patterns (AVS Forum)

Diversified Video Solutions (The Official Site)

CalMAN Video Calibration Software

ChromaPure Video Calibration Software

Color HCFR Calibration Software

Kalibrate Limited (The Official Site)

DVS UltraHD|HDR-10 Pattern Suite

UltraHD|HDR-10 Test Pattern Suite

Test Pattern & Mastering Display Metadata

Resolution: 3840 x 2160
Frame Rate: 23.976 (24000/1001)
Chroma subsampling: 4:2:0|Type 2
Bit depth: 10-Bit
Color primaries: BT.2020
Transfer characteristics: SMPTE ST 2084 (PQ)
Matrix coefficients: BT.2020 nc
Mastering display color primaries: P3, WP: x 0.3127 y 0.329
Mastering display luminance: min 0.0005 cd/m2, max 1000 cd/m2
MaxCLL: 1000 cd/m2
MaxFALL: 400 cd/m2

REV_025

Overview

This Pattern suite offers a comprehensive set of reference test patterns to assist in the calibration of your UHD|HDR-10 enabled display. This suite is comprised of 1,700+ patterns that adhere to the newly regulated standards created by the UHD Alliance and guaranteed triplet precision. I have divided the pattern sets into 6 main sections, Basic Setup Patterns, Advanced Setup Patterns (with 5% & 10% test patches), Miscellaneous Patterns and 3 independent workflows. The 3 separate workflows are a set of test patches that follow a predefined order specified by the calibration software itself. Please see the description below for further detail.

Calibration software

Color HCFR (version 3.5.1.XX) - A free yet very intuitive calibration software that is compatible with a wide variety of meters. Coined as a Video Projector/Monitor Calibration Software originally developed as ColorHCFR. This code base is based off version 2.1 and will aim for a more open development process and integrates an ArgyllCMS interface for continued support and development.

ChromaPure (version 3.1.XX) - A paid for software built around a very simplistic yet powerful infrastructure. Simply click one of the buttons along the left side of the program window to open one of its modules. Each module performs a different video calibration function and allows the user to quickly bring a any video display with adequate controls into conformity with industry standards.

CalMAN (version 5.9.XX) - A paid for software with an extremely powerful engine, customizable workflows, and compatible with almost all available meters, reference pattern generators, and standalone video processors. One of the most comprehensive and flexible calibration software packages available.

Basic Setup Patterns
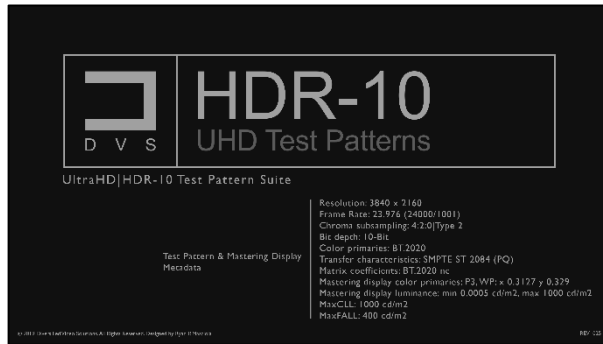
Title
Displaying test pattern and Mastering Display metadata, current revision and copyright. This clip provides pertinent information about the test patterns within the entire suite and will be updated accordingly per revision.
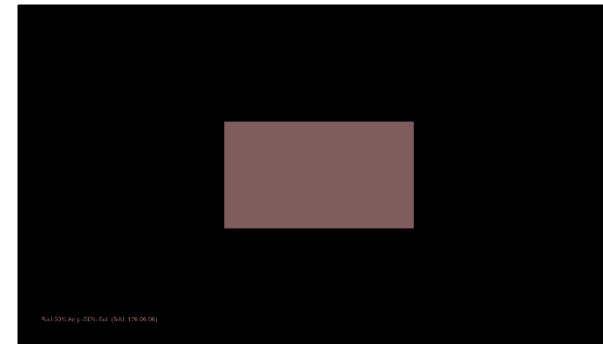

Color Profiling
Theses patterns were designed to improve the accuracy of a filter-based colorimeter by creating a calibration profile with a reference spectrophotometer. This profile, applied against your colorimeter measurements, corrects the inaccuracies of the filter-based meter. This makes the colorimeter mimic the accuracy of your spectrophotometer for this specific display.
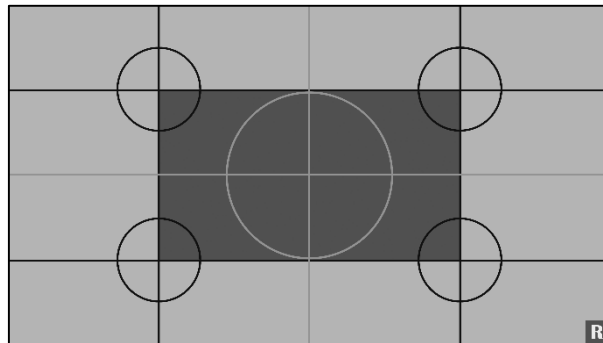

Meter Position
Designed to assist with the centering of your video calibration meter.
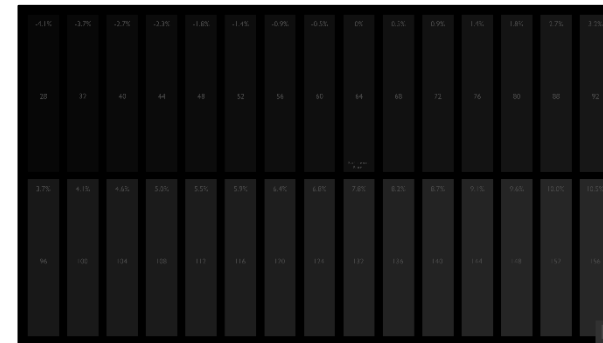
Black Clipping
Demonstrates how well tone mapping is applied on the lower end of the digital range. With triplet code value 64 as your reference point. A properly adjusted display should show bar 68 barely flashing, with bar 64 blending completely into the background. However, depending on how well the tone mapping is implemented, a code value of 72 or 76 may be acceptable. Representing .001 and .004 nit respectively.

Basic Setup Patterns continued
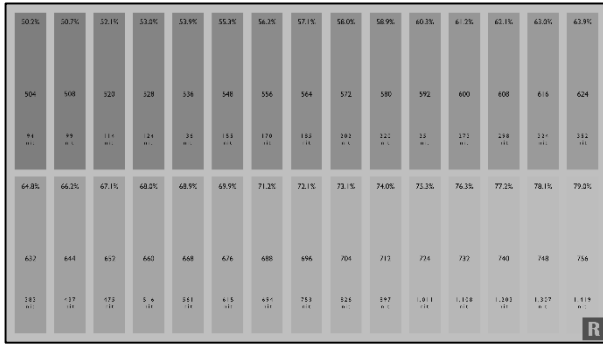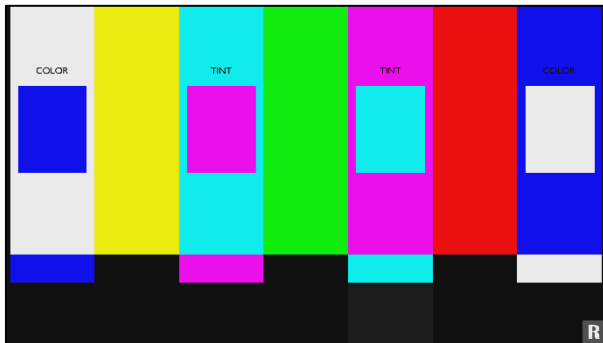

White Clipping
Demonstrates how well your display tone maps peak luminance information based on the metadata in which it's being feed. The metadata within this particular pattern is designed to clip at 1,000 nit. However, no matter how much you raise or lower the contrast controls, the peak luminance information (flashing bars) will always remain the same, even though the light output may increase or decrease onscreen. This is due to the internal tone mapping of your display.
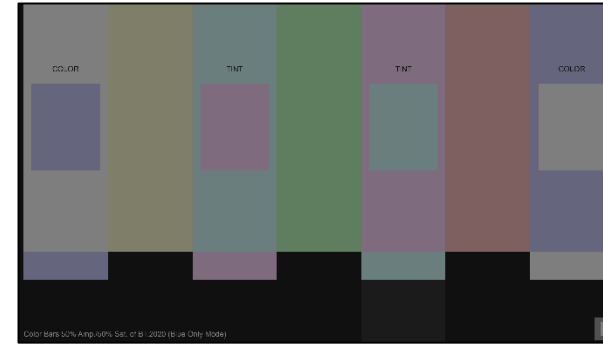
Flashing Color Bars 50%/50%
You can use this pattern to reference the color and tint accuracy of your display. If your display is one of the few that includes a color only mode, it can be used to adjust color and tint independently, within each color. Graded to 50% amplitude and 50% saturation of the BT.2020 color gamut, provides an attainable target for most HDR-10 enabled displays to achieve, roughly 100 nit.


Flashing Color Bars
You can use this pattern to reference the color and tint accuracy of your display. If your display is one of the few that includes a color only mode, it can be used to adjust color and tint independently, within each color. However, this color and tint pattern should only be used for observation purposes, as it displays 100% amplitude and 100% saturation of the entire BT.2020 color gamut, which is currently an unattainable target within consumer displays.
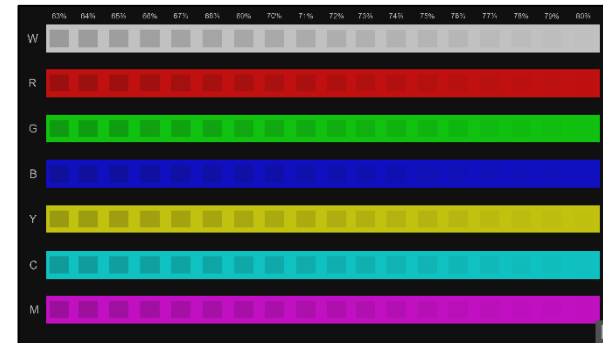
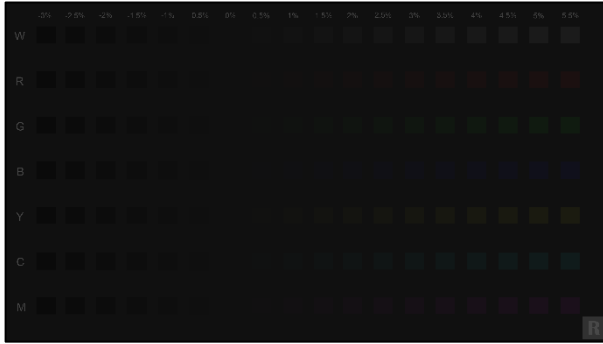**Color Clipping High**
Similar to the white clipping pattern. This clipping pattern demonstrates how well your display tone maps peak luminance information based on the metadata in which it's being feed. With the mastering display luminance set to 1,000 nit. You can observe how well the grayscale, primary and secondary colors are being mapped and/or clipped when nearing peak levels, roughly the 75% mark.

Basic Setup Patterns continued

Color Clipping Low
This pattern displays colors clipping on the low end of the spectrum. It's Not Vital that all colors flash near the 0% mark, so long as none of the colors flash past mark 0% mark or further. This would imply and elevated black floor or lifted brightness.
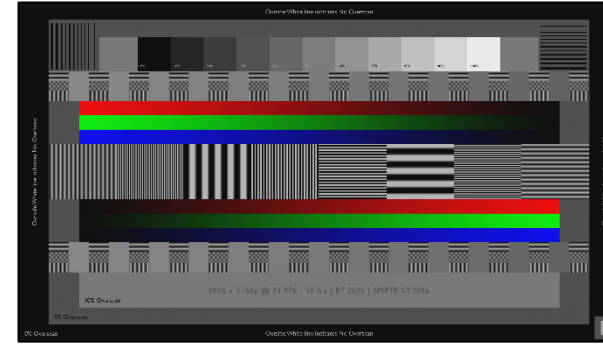

Sharpness & Overscan
You can use this pattern to properly adjust your display's sharpness and overscan in order to fill the entire screen properly. Typically, lower sharpness values are recommended. However, if the image looks soft, raise the value until you see ringing or noise around any of the black bars or lines within the pattern, then make adjustments accordingly until the ringing goes away. Overscan can be adjusted utilizing the 3 available overscan marks within the pattern. For absolutely no overscan, select your display's setting that exposes the entire white border outlining the pattern.

Miscellaneous Patterns
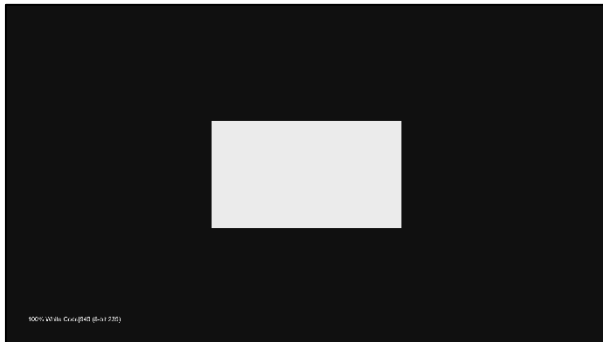
Contrast Ratio
Utilizing a meter. Measure the absolute peak luminance and black level of your display. These measurements will provide you with your display's dynamic contrast ratio.
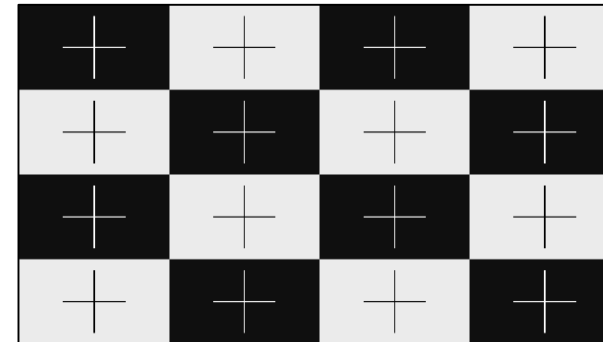
ANSI Contrast
Utilizing a meter. Take individual ANSI contrast measurements of your display. This will provide a true representation of your display's native contrast ratio.

Miscellaneous Patterns continued

Dynamic Contrast
Primarily utilized for quick observations. Check for any possible changes that might occur as the APL varies. As the full field pattern cycles, watch for any changes within the grayscale window. If the grayscale changes with the cycle, your display is dynamically adjusting picture levels.
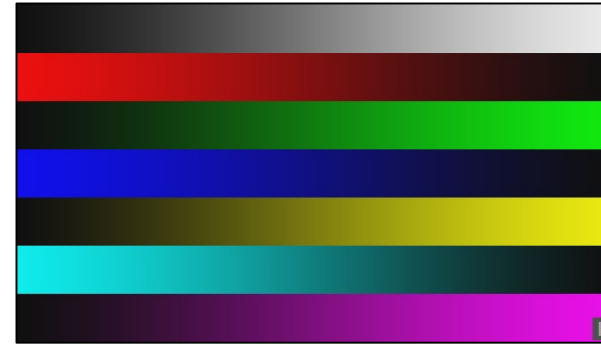
Color Ramps
This pattern set provides a multitude of 10-bit gradients and steps for both primary and secondary colors. These patterns range from 0 to 10,000 nit (10-bit digital range 64 – 940). However, the mastering display metadata is set to 1,000 nit, so clipping will be apparent above 75% on all patterns.

Grayscale Ramps
This pattern set provides a multitude of 10-bit gradients and steps for grayscale. These patterns range from 0 to 10,000 nit (10-bit digital range 64 – 940). However, the mastering display metadata is set to 1,000 nit, so clipping will be apparent above 75% on all patterns.
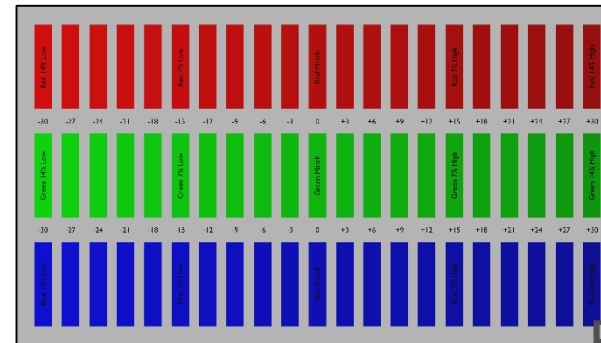
Color Decoding
This pattern can be used to observe how the primary colors (red, green and blue) relate to gray. In order to take full advantage of this test pattern, a display device with a color only mode is necessary.

Miscellaneous Patterns continued
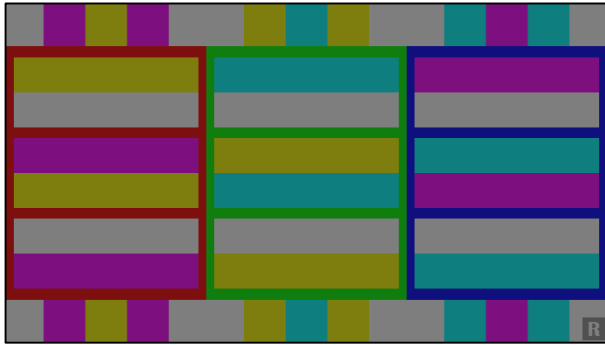
Flashing Color Primary
This pattern shows red, green, and blue bars (primary colors) and the three related secondary colors (yellow, cyan, magenta) flashing on top. Above and below each primary color the two secondary colors related to the primary color also flash in between.
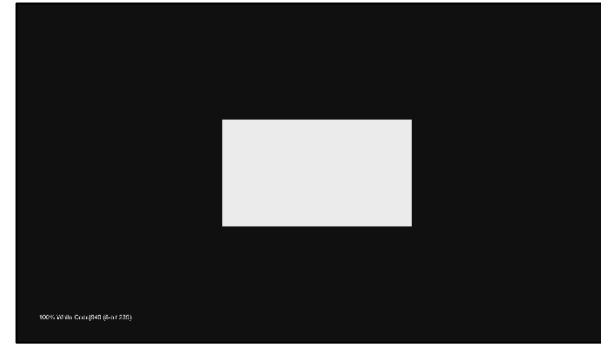
Different nit Levels
This file folder encompasses ten separate grayscale sweeps with mastering display metadata ranging from 1,000 to 10,000 nit, provided in 1,000 nit increments. These patterns can be utilized as a tone mapping reference for grayscale and how your display maps to its native peak nit level.
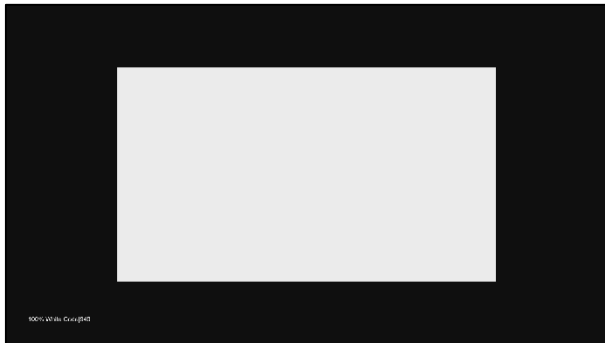
Grayscale Sweeps
This pattern file folder is comprised of ten subsection that include 11 step grayscale sweeps at different patch sizes. The patches range from 2% all the way up to Full Field. Utilizing a meter, you can observe any change within measurements based on the onscreen APL between patch sizes.
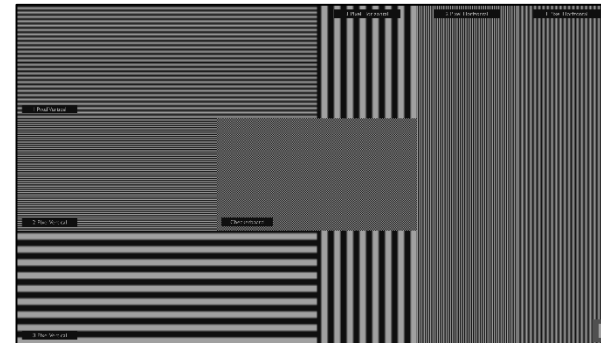
Resolution Patterns
This pattern file folder encompasses nine different 10-bit/UltraHD resolution test patterns. Testing your display's native ability to resolve fine detail within a 3840 x 2160 pixel space. These patterns have been divided into horizontal & vertical patterns, with a 1, 2, or 3 pixel count in width, checkered board, mixed resolution

and 1:1 pixel mapping.

Miscellaneous Patterns continued
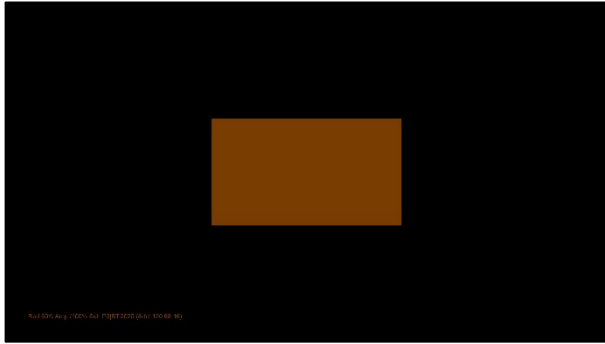
Color Gamuts in BT2020 Patterns
This file folder is comprised of 4 separate subsections. Including a 6 point color and 30 point saturation sweep for both P3 and BT.709 color axis points within the BT.2020 color gamut.
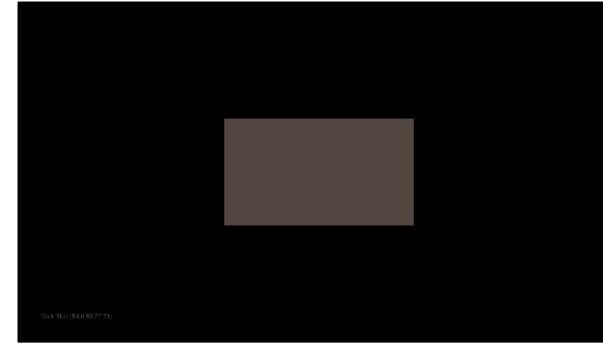
ColorChecker Sweeps
This pattern file folder is comprised of four separate subsections. The 24 Point MCD Original ColorChecker, 18 Point ChromaPure Skin Tone ColorChecker, 24 Point Pantone Skin Tones ColorChecker, and The 26 Point Calman Default ColorChecker. These four pattern sets have been designed to accurately target 50% of the BT.2020 color gamut, roughly 100 nit. The methodology behind this decision was to provide an attainable target for most HDR-10 enabled displays.

Test Footage
This Test Footage file folder includes eight separate reference HDR-10 test clips. Landscape, Nature, Skin Tone, City Sunset which is displayed in a 1.85:1 aspect ratio, Oceanside which is displayed in a 2.40:1 aspect ratio, Pantone SkinTone, Restaurant Scene and Indian Market. Each of the test footage clips are native sRGB that have been converted to BT2020/ST2084 and have been graded to 200 - 300 nit, with peak nit levels reaching 1,000 nit. Each of the eight test clips can act as a reference point for before and after calibration observations.

LG OLED Code based test patterns
This file folder contains the LG OLED code specific grayscales test patches for all 2016, 2017, 2018 & 2019 OLED models. Please reference the LG spec sheet links below for further details.

2016 Models & 2017 Models

Miscellaneous Patterns continued
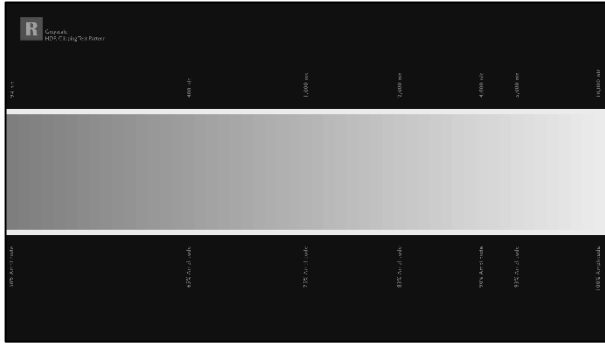
HDR Clipping Test Patterns
Demonstrates how well your display tone maps peak luminance information based on the metadata in which it's being feed. The metadata within this particular pattern is designed to clip at 1,000 nit. However, no matter how much you lower and/or raise the contrast controls, the peak luminance information (flashing bars) will always remain the same, even though the light output maybe increasing or decreasing onscreen. This is due to the internal tone mapping of your display.

Convergence Patterns
Designed to assist in front projection alignment, convergence, focus and projected image geometry. These types of convergence test patterns typically aren't needed for fixed pixel type displays like LCD or OLED.
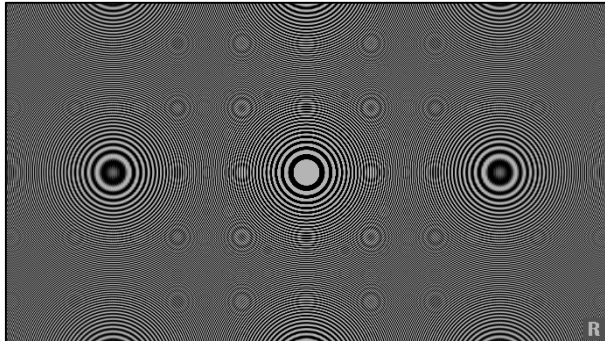
Digital Zone Plate Patterns
Designed to expose any anomalies within your display's ability to resolves certain resolution frequencies. Available in both primary and secondary colors, along with white.
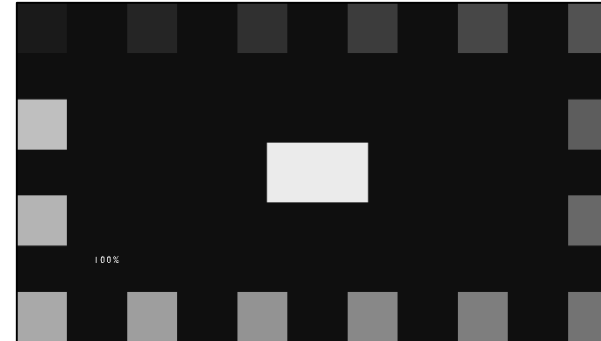
4% APL Window Patterns
These patterns were designed to help with calibration on displays with ABL by providing a constant APL throughout the entire sweep. The constant luminance provides a more consistence measurement, especially when compared to actual content. This file folder contains three separate subfolders for each software manufacture's Independent workflow.

Miscellaneous Patterns continued
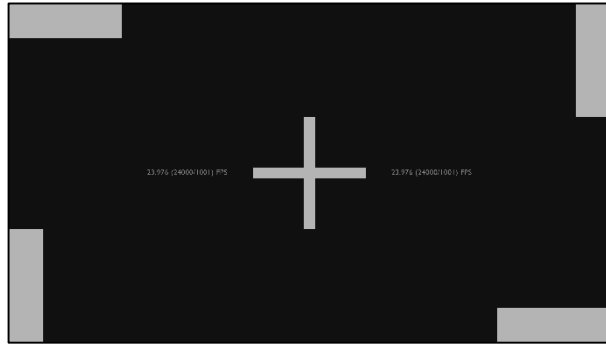
Frame Rate & Judder Patterns
Available in both 23.976 (24000/1001) and 59.940 (60000/1001) frame rates/Hz. These patterns are primarily utilized for quick observations regarding improper frame rate handling, unintentional film judder and other associated frame rate artifacts. Also, designed to expose any negative side effects brought on by frame interpolation.
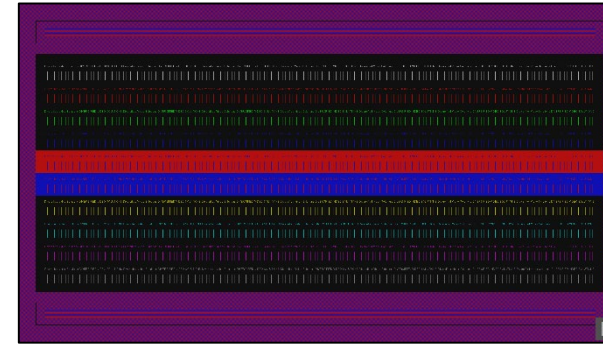
Chroma Subsampling Patterns
Since chroma subsampling is essentially a type of color compression. These test patterns were designed to show how well your display processes native 4:2:0 sub sampled content when resampled to either 4:2:2 or 4:4:4. These patterns were graded to three different nit levels, 100, 500 and 1,000 nit respectively, with a mastering display luminance of 1,000 nit.

Radial Gradient Patterns
Designed to expose banding artifact. This 10-bit gradient pattern is offered in both primary and secondary colors, along with grayscale. These patterns range from 1,000 nit peak from center down to 0 nit, in 1% increments.
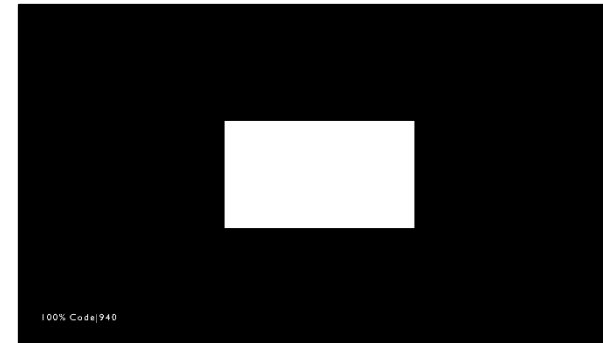
True 10-bit 10% Patch 21 Step Grayscale Sweep
Theses test patterns offer true 10-bit precision. Unlike the rest of the pattern suite (which utilizes an 8-bit to 10-bit scaled triplet methodology), these patterns are coded using true 10-bit triplet values. Unfortunately, current video calibration software still works within 8-bit. So currently, there is no added value in the utilization of true 10-bit test patches at the moment.

Miscellaneous Patterns continued
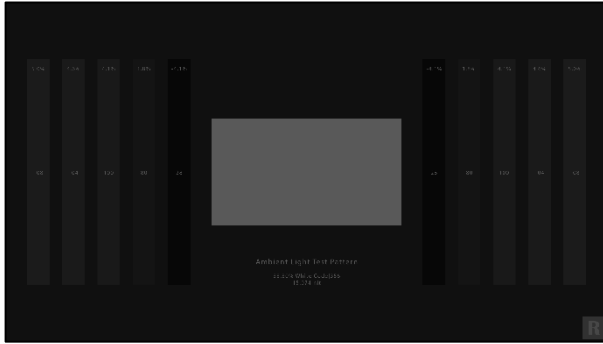
Ambient Light Test Patterns

These patterns offer a means to adjust ambient lighting (aka: bias lighting) on the wall behind the display via a visual comparison to the brightness of the various windows. Many users of this program will not have access to a spot photometer or suitable spectroradiometer to measure the luminance on the wall. The study of human visual perception is at the foundation of the video medium. Human vision is the basis of imaging science and technologies that seek to produce artificial images. Ambient lighting and surrounding colors in the viewing environment affect how the viewer perceives the image on a TV screen or electronic monitor. An otherwise "perfectly" calibrated display cannot deliver a reference image to the viewer in a non-reference environment. Video industry standards bodies (SMPTE, ITU, EBU, ATSC, etc.) and video engineers have understood these principles for over a half century.

A 'Reference Viewing Environment' has been specified to include a neutral gray "surround" and low level back lighting that is CIE D65 (aka: 6505K CCT) behind the monitor for decades. The room is to be devoid of any substantial additional lighting. These reference conditions are designed to minimize screen reflections, haze, and glare, plus relieve eye strain and preserve accurate color perception. All of the current display calibration specifications are taken from the standards
best practices used in the professional mastering of video programs. Such standards and best practices are used throughout the industry to insure consistent and unified program production, post-production, and program reproduction (image fidelity).

This UHD/HDR10 calibration program is primarily intended for the newest video displays. The most recent revision of reference viewing environment standards and recommended practice by the Society of Motion Picture and Television Engineers (SMPTE) specifies a formal standard of an ambient light level of 5 nits (cd/m2). This is also the most recent recommended practice specified for HDR imaging by the International Telecommunications Union (ITU). Both of these standards bodies specify the display to be calibrated to 100 nits for peak white, using a specific sized window pattern. The ambient light level visual comparison patterns in this program have 5, 10, and 15 nit windows derived from the formula for calculating the electrical optical transfer function (EOTF}, or Perceptual Quantizer Transfer Function (PQ), for HDR (SMPTE ST 2084:2014). The 10 and 15 nit window patterns are for comparison with older recommended practice as noted in the patterns.

How to use the patterns

Simply display the pattern of choice after calibrating the display while visually adjusting the ambient lighting on the wall behind the display in an otherwise light-less room. Visually compare the level of light on the wall to the level of light in the window. PLUGE patterns are included with the window for tweaking the black level (aka: brightness) of the display with the ambient light present. This is to insure the adequate perception of shadow detail in the final image.

Miscellaneous Patterns continued

5 nit window pattern: Above the window- "Ambient Light Level Visual Comparison" Below the window- "Formal standard of 5 nits (cd/m2) SMPTE ST 2080-3:2017, for HDTV", "ITU-R BT.2100-0-(07/2016), recommended practice for HDR"

10 nit window pattern: Above the window- "Ambient Light Level Visual Comparison" Below the window- "Recommended practice of 10% of a peak white at 100 nits (cd/m2)", "SMPTE RP 166-1995, for SDTV; ITU-R BT.2035 (07/2013), for HDTV"

15 nit window pattern: Above the window- "Ambient Light Level Visual Comparison" Below the window- "Recommended practice of 15% of a peak white at 150-250 nits (cd/m2)", "ITU-R BT.710-4 (11/98), for consumer HDTV environments"

For additional study of viewing environment principles, practices, and solutions, see this technical document: https://cinemaquestinc.com/ive.htm , plus the standards documents referenced.
(Developed in cooperation with G. Alan Brown, President, CinemaQuest, Inc., www.cinemaquestinc.com)"

DVS UltraHD|HDR-10 Pattern Suite

Basic Setup

- **Title** (REV_024)
- **Meter Placement**
- **Meter Profile** (10% Window Patterns Red, Green, & Blue @ 50%Amp/50%Sat)
- **Black Clipping** (1 & 2)
- **White Clipping** (1, 2, 3 & 4)
- **Color Bars** (100% BT.2020 & 50% BT.2020)
- **Color Clipping** (Color Clipping Mix, Low, & High)
- **Sharpness & Overscan**

Workflows

CalMAN HDR-10 Workflow (version 5.9.XX)
- Pre Calibration View
- White Balance
- Grayscale
- CMS Adjust
- ColorChecker Analysis
- BT2020 Saturation Sweeps
- P3 Sat Sweep inside BT2020
- BT709 Sat Sweep inside BT2020
- Post Calibration View

ChromaPure HDR-10 Workflow (version 3.1.XX)
- Pre-Calibration Grayscale
- Pre-Calibration Color Gamut
- Calibration Gamma
- Calibration White Balance
- Calibration Color Management

Workflows

- Calibration Color & Tint
- Calibration Performance
- Post-Calibration Grayscale
- Post-Calibration Color Gamut

Color HCFR HDR-10 Workflow (version 3.5.1.XX)
- Grayscale
- Primaries and Secondaries
- Near Black
- Near White
- CMS Saturation Scale
- ColorChecker
- Contrast

Advanced Setup Patterns

5% Window Patterns

- 11 Step Grayscale
- 21 Step Grayscale
- 10 Step Gamma
- 20 Step Gamma
- 100% Amplitude/100% Saturation Color
- 75% Amplitude/100% Saturation Color
- 50% Amplitude/100% Saturation Color
- 25% Amplitude/100% Saturation Color
- 50% Amplitude/50% Saturation Color
- 50% Amplitude Color Saturation Sweep
- 40 Point Color Checker
- Near White
- Near Black

Advanced Setup Patterns

- Contrast

10% Window Patterns

- 11 Step Grayscale
- 21 Step Grayscale
- 10 Step Gamma
- 20 Step Gamma
- 100% Amplitude/100% Saturation Color
- 75% Amplitude/100% Saturation Color
- 50% Amplitude/100% Saturation Color
- 25% Amplitude/100% Saturation Color
- 50% Amplitude/50% Saturation Color
- 50% Amplitude Color Saturation Sweep
- 40 Point Color Checker
- Near White
- Near Black
- Contrast

Miscellaneous Setup Patterns

- **Contrast Ratio** (2%, 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40% & Full Field)
- **ANSI Contrast** (ANSI Meter Placement & ANSI Contrast)
- **Dynamic Contrast**
- **Grayscale Ramps** (Grayscale Steps, Grayscale Ramp, & Grayscale Ramp Mix)
- **Color Ramps** (Color Steps, Color Ramps, & RGBYCM Single Color Ramps)
- **Color Decoding** (Color Decoding & Color Decoding 50% Amp)
- **Color Flashing Primary**

DVS UltraHD|HDR-10 Pattern Suite

Miscellaneous Setup Patterns

- **Grayscale Sweeps** (2% Window Patterns, 5% Window Patterns, 10% Window Patterns, 15% Window Patterns, 20% Window Patterns, 25% Window Patterns, 30% Window Patterns, 35% Window Patterns, 40% Window Patterns & Full Field Patterns)
- **Different nit Levels** (10% Window Patterns @ 1,000 nit, 2,000 nit, 3,000 nit, 4,000 nit, 5,000 nit, 6,000 nit, 7,000 nit, 8,000 nit, 9,000 & 10,000 nit levels)
- **Resolution Patterns** (Resolution Mix Pattern, Resolution Vertical Pattern 1 Pixel, Resolution Vertical Pattern 2 Pixel, Resolution Vertical Pattern 3 Pixel, Resolution Horizontal Pattern 1 Pixel, Resolution Horizontal Pattern 2 Pixel, Resolution Horizontal Pattern 3 Pixel, & Resolution Black Pixels Single)
- **Color Gamuts in BT2020 Patterns**
- **ColorChecker Sweeps**
- **Test Footage** (Landscape, Nature, Skin Tone, City Sunset 1.85:1, Oceanside 2.40:1, Pantone Skin Tone, Restaurant Scene, Indian Market, Walk In The City & Rooftop Scene)(Original TIF, PNG, & JPG Files)
- **LG Display Test Patterns** (2016, 2017, 2018 & 2019 OLED code values and UK65xx series code values)
- **HDR Clipping Test Patterns**
- **Digital Zone Plate Patterns**
- **Convergence Patterns**
- **4% APL Window Patterns** (21 Step Grayscale & 50% Amp_50% Sat Color)

- **Frame Rate & Judder Patterns** (Judder Test 24 FPS, Judder Test 60 FPS, & Multi-Bar Judder Test 24 FPS)
- **Radial Gradient Patterns** (WRGBYCM)
- **Chroma Subsampling Patterns** (Chroma Subsampling 100 nit, 500 nit, & 1,000 nit)
- **True 10-bit 10% Patch 21 Step Grayscale Sweep**
- **Ambient Light Test Patterns**
- **Samsung 2018 Code Values** (Code value set 1 & 2)
- **White Clipping 80% - 100% Different nit Levels**

Pattern Metadata

Video

ID:..256(0x100)
Menu ID:..1 (0x1)
Format:...HEVC
Format/Info: ....High Efficiency Video Coding
Format profile:............................Main 10@L5.1@Main
Codec ID:...36
Duration:...1mn 0s
Width:...3840 pixels
Height:..2160 pixels
Display aspect ratio:.......................................16:9
Frame rate:............................23.976 (24000/1001)fps
Color space:...YUV
Chroma subsampling:.................................4:2:0 (Type 2)
Bit depth:..10 bits
Writing library:.....................x265 2.6+13-6b079854e56e:[Windows][GCC 7.2.0][64 bit] 10bit
Encoding settings: cpuid=1173503 / frame-threads=3 / numa-pools=8 / wpp / no-pmode / no-pme / no-psnr / no-ssim / log-level=2 / input-csp=1 / input-res=3840x2160 / interlace=0 / total-frames=1439 / level-idc=51 / high-tier=1 / uhd-bd=1 / ref=4 / no-allow-non-conformance / repeat-headers / annexb / aud / hrd / info / hash=0 / no-temporal-layers / no-open-gop / min-keyint=1 / keyint=24 / bframes=4 / b-adapt=2 / b-pyramid / bframe-bias=0 / rc-lookahead=25 / lookahead-slices=4 / scenecut=40 / no-intra-refresh / ctu=64 / min-cu-size=8 / rect / no-amp / max-tu-size=32 / tu-inter-depth=1 / tu-intra-depth=1 / limit-tu=0 / rdoq-level=2 / dynamic-rd=0.00 / no-ssim-rd / signhide / no-tskip / nr-intra=0 / nr-inter=0 / no-constrained-intra / no-strong-intra-smoothing / max-merge=3 / limit-refs=3 / limit-modes / me=3 / subme=3 / merange=57 / temporal-mvp / weightp / no-weightb / no-analyze-src-pics / deblock=0:0 / sao / no-sao-non-deblock / rd=4 / no-early-skip / rskip / no-fast-intra / no-tskip-fast /

no-cu-lossless / no-b-intra / rdpenalty=0 / psy-rd=2.00 / psy-rdoq=1.00 / no-rd-refine / analysis-mode=0 / no-lossless / cbqpoffs=0 / crqpoffs=0 / rc=abr / bitrate=50000 / qcomp=0.60 / qpstep=4 / stats-write=0 / stats-read=0 / vbv-maxrate=70000 / vbv-bufsize=50000 / vbv-init=0.9 / ipratio=1.40 / pbratio=1.30 / aq-mode=1 / aq-strength=1.00 / cutree / zone-count=0 / no-strict-cbr / qg-size=32 / no-rc-grain / qpmax=69 / qpmin=0 / sar=1 / overscan=0 / videoformat=0 / range=0 / colorprim=9 / transfer=16 / colormatrix=9 / chromaloc=1 / chromaloc-top=2 / chromaloc-bottom=2 / display-window=0 / master-display=G(13250,34500) B(7500,3000) R(34000,16000) WP(15635,16450) L(5400000,0) / max-cll=0,0 / min-luma=0 / max-luma=1023 / log2-max-poc-lsb=8 / vui-timing-info / vui-hrd-info / slices=1 / opt-qp-pps / opt-ref-list-length-pps / no-multi-pass-opt-rps / scenecut-bias=0.05 / no-opt-cu-delta-qp / no-aq-motion / hdr / no-hdr-opt / no-dhdr10-opt / refine-level=5 / no-limit-sao / ctu-info=0
Color range:...Limited
Color primaries:..BT.2020
Transfer characteristics:..........................SMPTE ST 2084 (PQ)
Matrix coefficients:.............................BT.2020 non-constant
Mastering display color primaries:............R: x=0.680000 y=0.320000, G: x=0.265000 y=0.690000, B: x=0.150000 y=0.060000, White point: x=0.312700 y=0.329000
Mastering display luminance:.....................min: 0.0005 cd/m2 , max: 1000.0000 cd/m2
Maximum Content Light Level:.....................1000 cd/m2
Maximum Frame Average Light Level:..................400 cd/m2

Pattern Metadata

Audio

ID:..257 (0x101)
Menu ID:...1 (0x1)
Format:..AAC
Format/Info:..Advanced Audio Codec
Format version:..Version 2
Format profile:..LC
Muxing mode:...ADTS
Codec ID:..15
Duration:..1mn 2s
Channel(s):...2 channels
Channel positions:..Front: L R
Sampling rate:...48.0 KHz
Frame rate:...46.875 fps (1024 spf)
Compression mode:..Lossy